

DEPARTMENT OF THE ARMY
Omaha District, Corps of Engineers
106 South 15th Street
Omaha, Nebraska 68102-1618

:NOTICE: Failure to acknowledge : Solicitation No. DACW45 03 B 0006
:all amendments may cause rejec- :
:tion of the bid. See FAR : Date of Issue: 05 Feb 2003
:52.214-3 of Section 00100 : New Date of Opening: 10 Mar 2003

Amendment No. 0001
27 February 2003

SUBJECT: Amendment No. 0001 to Specifications and Drawings for Construction of
Install Transformer, Fort Peck Power Plant, Fort Peck, MT
Solicitation No. DACW45 03 B 0006.

TO: Prospective Bidders and Others Concerned

1. The specifications and drawings for subject project are hereby modified as follows (revise all specification indices, attachment lists, and drawing indices accordingly).

a. Specifications. (Descriptive Changes.)

(1) Page 00010-1, delete date and time of bid opening shown and substitute "10 March 2003" at "2:00".

(2) Section 00100 Page 16, add the following new paragraphs:

"32 (FAR 52.217-5) EVALUATION OF OPTIONS (JUL 1990).

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

33 OPTIONS.

The Government may reject an offer as nonresponsive if it is materially unbalanced as to prices for the basic requirement and the option quantities. An offer is unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work. "

(3) Section 00800 Page 2, paragraph 1.2, add the following:

"The Government Furnished Contractor Installed (GFCI) 200MVA transformer is scheduled to arrive at the Fort Peck project on/or about 17 May 2003 ?3 days. The delivery agent will off load the transformer onto a pad as directed by the Government. If the new transformer pad is ready to accept the new transformer, it will be off loaded onto the new pad. If the new transformer pad is not ready to accept the new transformer, it will be off loaded onto Government furnished railroad ties in the switchyard for temporary storage

and this Contractor shall be responsible for moving it to the new pad when the new pad is ready. (See amended Sheet E-8 for the temporary storage location.) Should the pad not be ready to receive the transformer when it arrives from the delivery agent, then the Government will exercise the Option (0-1) which will consist of the costs involved in transporting and placement of the new transformer from the temporary storage location to the new pad."

(4) Section 13284, add the attached Test Report after the section.

(5) Section 16311 Page 3, delete Part 1 paragraphs and substitute the following:

"PART 1 GENERAL

This project involves the installation of a Government Furnished Contractor Installed (GFCI) transformer. The oil for the new transformer will be GFCI. The Contractor shall remove the existing auto-transformer, its oil, old control cables, and concrete mounting pad. The Contractor shall take possession of these items and shall dispose of them off site meeting all state and federal laws for such disposal. The Contractor shall perform all work necessary for the installation of the Government furnished transformer.

The Government will furnish 40 man-hours of erecting engineer's services from the transformer manufacturer for technical assistance in the installation, filling and commissioning of the new transformer.

The Government operators will operate the existing disconnect switches and issue outage clearance tags. The Contractor shall fully comply with the Fort Peck Project safety clearance tagging system. Under no circumstance shall the Contractor operate any disconnect switches.

The Contract shall moved the existing transformer from it's current location to the first turn point on the existing rail system due East just outside the fence. (Via the existing rails. The existing transformer has wheels. See Sheet E-2) The Contractor may remove the existing oil from site. Any disassembly should permit reassembly if necessary until the new transformer is placed on the new pad. (The Government shall retain ownership until the new transformer is on new pad. The existing transformer may need to be returned to service if something extreme happens to the new transformer.)

The existing transformer shall not be dismantled beyond that required for shipping off site. The core shall in no way be untanked on site. Untanking shall only be allowed in a Contracting Officer approved facility with proper spill containment, off site."

(6) Section 16311 Page 10, paragraph 2.2.2 delete the paragraph.

(7) Section 16311 Page 12, delete paragraph 2.5.1.1 and substitute the following new paragraph:

" 2.5.1.1 Incoming Line

Incoming line units shall be coordinated with the requirements of the serving utility, and to the protected transformer, and shall include the following control and monitoring system items that shall be mounted in the instrument and relay cabinet specified below

- a. One Schweitzer Engineering Laboratories SEL-387 Primary Current Differential and Overcurrent Relay, devices 50, 51, 67G, 87 suitable

for 19" rack mounting. The SEL part number is 0387513X5H2X4X or approved equal. The relay shall have standard plus integration enhancements firmware, additional 12 std outputs, 8 inputs, 3U, 48/125Vdc or 125V AC power supply, 5 amp secondary input current, horizontal rack mount, 125Vdc control input voltage, standard comm. protocol. (Note: The Government is furnishing a 19" rack for Contractor installation.) The Contractor shall install the rack in Panel 3RB see For Information Only Drawing MFP-OPN83E937B.6

- b. One Schweitzer Engineering Laboratories SEL-387 Back-up Current Differential and Overcurrent Relay, devices 50, 51, 67G, 87 suitable for 19" rack mounting. The SEL part number is 0387513X5H2X4X or approved equal. The relay shall have standard plus integration enhancements firmware, additional 12 std outputs, 8 inputs, 3U, 48/125Vdc or 125V AC power supply, 5 amp secondary input current, horizontal rack mount, 125Vdc control input voltage, standard comm. protocol. The Contractor shall mount in the above paragraph a GFCI 19" rack in Panel 3RB.
- c. Three-phase secondary potential test blocks with associated test plug. The Contractor shall furnish two AVO International Type FMS 19" Rack Mounting System Test Switches Catalog No. 293R-330S-ST, 30 single pole, single throw potential switches with stud terminals and clear cover (one for each relay) or approved equal. These test switches shall be mounted on the 19" rack that will be mounted in Panel 3RB.
- d. Three-phase secondary current test blocks with associated test plug for each current transformer circuit. The Contractor shall furnish two AVO International Type FMS 19" Rack Mounting System Test Switches Catalog No. 293R-330HC-ST, 13 make before break currents and 4 potential with stud terminals and clear cover (one for each relay) or approved equal. These test switches shall be mounted on the 19" rack that will be mounted in Panel 3RB.
- e. The Contractor shall remove 87XAT1 Lockout Relay on Panel 3RB. The Contractor shall instead use output contacts directly from the new SEL-387 Primary and Back-up Relays to trip the breakers that were tripped from 87XAT1 Lockout Relay.
- f. The Contractor shall provide three new digital power meters which shall be installed on Panel 6IB (see FIO drawing MFP-OPN83E940.13). The new meters shall replace existing meters in BB, BD, CB, CD, DB, & DD positions on Panel 6IB. The new meters shall be installed in positions BB, BC, & CB and shall be designated 230/161kV AT1, 115kV AT1, & 13.8kV AT1. The Contractor shall provide and install cover plates for the open positions CD, DB, & DD on Panel 6IB. The new digital power meters shall be utility-grade meters that can be connected directly to instrument transformers with three 4-digit, high efficiency, 7-segment, 0.56" high, red LCD displays and an automatic Engineering Units display. The meters shall be multiple microprocessor design that uses advanced digital signal processing for true RMS measurement including power and shall calculates and displays Voltages, Currents, Power (real, reactive, apparent), Power Factor, Frequency, and Energy values. Real-time Harmonics, K-factor, Displacement Power Factor, and Demand measurements. The meter shall store these measured values in internal registers for serial communication access using Modbus RTU slave communication protocol. The meters shall be Bitronics MultiComm Digital Power Meter or approved equal.

(8) Section 16311 Page 13, paragraph 2.6.1, add the following to the end of the paragraph: "For Information Only drawings from ELCO Industries Ltd."

(9) Section 16311 Page 15, paragraph 2.11 delete the paragraph and insert the following:
"Surge arresters will be Government furnished with the new transformer and Contractor installed."

(10) Section 16311 Page 16, add the following to the end paragraph 3.2.1:
"The Government will prepare the coordination study and provide pertinent information the Contractor for his installing and commissioning of the new transformer."

(11) Section 16311 Page 19, add the following to the end paragraph 3.5.5:
"The Government will furnish relay settings to the Contractor from its coordination study."

(12) Section 16311 Page 23, delete paragraph 3.6.2 and substitute the following:

"3.6.2 Installation Engineer

The Contractor shall use the 200 MVA transformer manufacturer's erecting engineer to assist in the performance of the onsite tests, initial operation, and instruct personnel as to the operational and maintenance features of the transformer. The Government will provide 40 man-hours of the erecting engineer's services. The Contractor shall give the Contracting Officer not less than 7 days written notice as to when the erecting engineer's services are required."

(13) Section 16311, add the attached Fort Peck Cable Schedule after the section.

b. Specifications (New and/or Revised and Reissued). Delete and substitute or add specification pages as noted below. The substituted pages are revised and reissued with this amendment.

<u>Pages Deleted</u>	<u>Pages Substituted or Added</u>
00010-1 & 00010-2	00010-1 thru 00010-3

c. Drawings (Not Reissued). The following drawing sheet is revised as indicated below with latest revision date of 27 February 2003. This drawing is not reissued with this amendment.

- (1) Index Sheet,
a) Sheet MFP-OPN83E306C.9 should read MFP-OPN83E306C.6.
b) Add the following drawings to the index sheet under "ELECTRICAL":

"FP25D301.CAL D3.01 LOCATION PLAN AND VICINITY MAP"

c) Add the following drawings to the index sheet under "FOR INFORMATION ONLY":

"FP25306C.DGN	MFP-OPN83E306C.6	THREE LINE DIAGRAM - SHEET 9 - RICHARDSON COULEE LINE
FP25E367.DGN	MFP-OPN83E367.6	VCB 724 & AUTO TRANS #1 - CONTROL DIAGRAMS
FP25E382.DGN	MFP-OPN83E382.8	RICHARDSON COULEE LINE - CONTROL DIAGRAM - SHEET 1
FP25382A.DGN	MFP-OPN83E382A	RICHARDSON COULEE LINE - CONTROL DIAGRAM - SHEET 2
FP25E383.DGN	MFP-OPN83E383.1	WEST SYSTEM GEN DROPPING - RELAYING COMMUNICATIONS - WIRING AND D.C. CONTROL DIAGRAMS
FP25910.DGN	MFP-OPN83910.6	RELAY BOARD - ASSEMBLY
FP25911.DGN	MFP-OPN83911.6	RELAY BOARD - NAMEPLATE SCHEDULE - AND BILL OF MATERIALS
FP25911A.DGN	MFP-OPN83911A.4	RELAY BOARD - NAMEPLATE SCHEDULE - AND BILL OF MATERIALS - SHEET 1
FP25911B.DGN	MFP-OPN83911B.1	RELAY BOARD - NAMEPLATE SCHEDULE - AND BILL OF MATERIALS - SHEET 2
FP25911C.DGN	MFP-OPN83911C.2	RELAY BOARD - NAMEPLATE SCHEDULE - AND BILL OF MATERIALS - SHEET 3
FP25911D.DGN	MFP-OPN83911D	RELAY BOARD - NAMEPLATE SCHEDULE - AND BILL OF MATERIALS - SHEET 4
FP25911E.DGN	MFP-OPN83911E.1	RELAY BOARD - NAMEPLATE SCHEDULE - AND BILL OF MATERIALS - SHEET 5
FP25937B.DGN	MFP-OPN83937B.6	RELAY BOARD - WIRING - PANEL 3RB
FP25937C.DGN	MFP-OPN83937C.3	RELAY/TERMINAL BOARD WIRING - PANEL 3RB "

d. Drawings (Reissued). The following drawing sheets are revised with latest revision date of 27 February 2003, the portion of the sheet with the revision is reissued with this amendment.

(1) Sheets E-3, E-4, E-8, E-9, and E-10.

e. Drawings (New). The following new drawing sheets dated 27 February 2003 are hereby added to the contract drawings and are issued with this amendment.

(1) Sheets MFP-OPN83E306C.6, MFP-OPN83E382.8, MFP-OPN83E383.1

MFP-OPN83E367.6 and MFP-OPN83E382A

2. This amendment is a part of the bidding papers and its receipt shall be

acknowledged on the Standard Form 1442. All other conditions and requirements of the specifications remain unchanged. If the bids have been mailed prior to receiving this amendment, you will notify the office where bids are opened, in the specified manner, immediately of its receipt and of any changes in your bid occasioned thereby.

a. Hand-Carried Bids shall be delivered to the U.S. Army Corps of Engineers, Omaha District, Contracting Division (Room 301), 106 South 15th Street, Omaha, Nebraska 68102-1618.

b. Mailed Bids shall be addressed as noted in Item 8 on Page 00010-1 of Standard Form 1442.

3. Bids will be received until 2:00 p.m., local time at place of bid opening, 10 March 2002.

Attachments:

Standard Form 1442 Pages 00010-1, 00010-2, 00010-3

Spec Pages listed in 1.b. above

Dwgs. listed in 1.d. and 1.e. above

U.S. Army Engineer District, Omaha
Corps of Engineers
106 South 15th Street
Omaha, Nebraska 68102-1618

28 February 2003
MFS/4411

SOLICITATION, OFFER, AND AWARD (Construction, Alteration, or Repair)	1. SOLICITATION NO.	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
	DACW45-03-B-0006	<input checked="" type="checkbox"/> SEALED BID (IFB) <input type="checkbox"/> NEGOTIATED (RFP)	05 Feb 2003	1 OF 2

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.
7. ISSUED BY	CODE	8. ADDRESS OFFER TO
	CT	
U S ARMY ENGINEER DISTRICT, OMAHA 106 South 15th Street Omaha, Nebraska 68102-1618		U.S.ARMY CORPS OF ENGINEERS, OMAHA Attn: CONTRACTING DIVISION (CENWO-CT) 106 South 15th Street Omaha, Nebraska 68102-1618
9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS)
	See SECTION 00100, Para. 25	See SECTION 00100, Para. 25

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying no., date):

The Offeror hereby agrees to do all the work described in these documents entitled:

Install Transformer
Fort Peck Power Plant, Fort Peck, MT

RETURN WITH BIDS: SECTION 00010 (SF1442), SECTION 00600 REPRESENTATIONS, CERTIFICATIONS & OTHER STATEMENTS OF BIDDERS, and all Bonding Requirements, See SECTION 00700 CONTRACT CLAUSES and SECTION 00100 for Performance and Payment Bonds.

11. The Contractor shall begin performance within <u>10</u> calendar days and complete it within <u>90</u> calendar days after receiving <input type="checkbox"/> award, <input checked="" type="checkbox"/> notice to proceed. This performance period is <input checked="" type="checkbox"/> mandatory, <input type="checkbox"/> negotiable. (See _____.)	12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? (If "YES," indicate within how many calendar days after award in Item 12B.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	12B. CALENDAR DAYS 10
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13. ADDITIONAL SOLICITATION REQUIREMENTS:

- A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 2:00 pm (hour) local time 10 Mar 2003 (date). If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.
- B. An offer guarantee ☒ is, ☐ is not required.
- C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.
- D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code) <div style="color: blue; font-weight: bold;">DUNS Number:</div>				15. TELEPHONE NO. (Include area code) 16. REMITTANCE ADDRESS (Include only if different than Item 14)			
CODE		FACILITY CODE					
17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within <u>60</u> calendar days after the date offers are due. (Insert any number equal to or greater than the minimum requirement stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)							
AMOUNTS		<div style="color: blue; font-weight: bold;">See Attached Bidding Schedule</div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> Contractor's Fax No. _____ CAGE CODE _____ </div> <div style="margin-top: 5px;"> Contractor's E-Mail address _____ </div>					
18. The offeror agrees to furnish any required performance and payment bonds.							
19. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)							
AMENDMENT NO.							
DATE							
20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)				20B. SIGNATURE		20C. OFFER DATE	
AWARD (To be completed by Government)							
21. ITEMS ACCEPTED:							
22. AMOUNT				23. ACCOUNTING AND APPROPRIATION DATA			
24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)			ITEM <div style="color: blue; font-weight: bold;">26</div>	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> 10 U.S.C. 2304(c) () <input type="checkbox"/> 41 U.S.C. 253(c) () </div>			
26. ADMINISTERED BY <div style="color: blue; font-weight: bold;">U.S. Army Engineer District, Omaha</div> <div style="color: blue; font-weight: bold;">106 South 15th Street</div> <div style="color: blue; font-weight: bold;">Omaha, Nebraska 68102-1618</div>			27. PAYMENT WILL BE MADE BY <div style="color: blue; font-weight: bold;">USAED Omaha</div> <div style="color: blue; font-weight: bold;">c/o USACE Finance Center</div> <div style="color: blue; font-weight: bold;">5722 Integrity Drive</div> <div style="color: blue; font-weight: bold;">Millington, TN 38054-5005</div>				
CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE							
<input type="checkbox"/> 28. NEGOTIATED AGREEMENT (contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.				<input type="checkbox"/> 29. AWARD (Contractor is not required to sign this document.) Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.			
30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN (Type or print)				31A. NAME OF CONTRACTING OFFICER (Type or print)			
30B. SIGNATURE		30C. DATE		31B. UNITED STATES OF AMERICA BY		31C. AWARD DATE	

BIDDING SCHEDULE

<u>Item No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Amount</u>
<u>BASIC</u>				
1.	Entire work complete excluding the option below.	Job	L.S.	\$ _____

OPTIONS

0-1	All work complete for transporting and placement of the new Transformer, as described in Section 00800 paragraph 1.2	Job	L.S.	\$ _____
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TOTAL AMOUNT (BASIC + OPTION) \$ _____
(in figures)

Notes:

1. See SECTION 00100, INSTRUCTIONS, CONDITIONS, & NOTICES TO BIDDERS for evaluation of options. The Government reserves the right to exercise the options within 90 days after issuance of Notice to Proceed.
2. Bid prices must be entered for all items of the schedule. Total amount bids submitted without bid prices being entered on individual items will be rejected. Additions will be subject to verification by the Government. In case of variation between the lump-sum prices and the total amount, the lump-sum prices will be considered the bid.
3. A modification to a bid which provides for a single adjustment to the total amount bid, should state the application of the adjustment to each respective lump-sum price affected. If the modification is not so apportioned, the single adjustment will be applied to Item No. 1.

NATIONAL CHEM LAB PCB TEST REPORT

01/29/91

UTILITY SERIAL NO.	COMPANY #	MISC.	AROCLOR	PPM	NCL #
23425	FP 23	CON E	1260	1	OE1014364
23427	FP 24	CON E	1260	1	OE1014365
E45243745	FP 25	AC	1260	2	OE1014366
841075827	FP 26	RTE		ND	OE1014367
841075834	FP 27	RTE		ND	OE1014368
CR1034G1B	FP 28	GE	1260	19	OE1014369
895584	1	MAL	1260	36	OE1014370
895583	2	MAL	1260	18	OE1014371
895582	3	MAL	1260	39	OE1014372
895585	4	MAL	1260	9	OE1014373
2A-3083	5	PENN	1260	78	OE1014374
4616-2	6	PENN	1260	19	OE1014375
4616-3	7	PENN	1260	30	OE1014376
4616-1	8	PENN	1260	41	OE1014377
894597	9	MAL	1260	9	OE1014378
894598	10	MAL	1260	71	OE1014379
894599	11	MAL	1260	4	OE1014380
2366959TAP	12	AC	1260	18	OE1014381
2366959	13	AC	1260	19	OE1014382
2366958	14	AC	1260	25	OE1014383
2366958TAP	15	AC	1260	17	OE1014384
803029	16	ELIN	1260	6	OE1014385
803030	17	ELIN	1260	15	OE1014386
803031	18	ELIN	1260	14	OE1014387
803055	19	ELIN UNION	1260	1	OE1014388
3381467	20	WH	1260	11	OE1014389

Lab Report #:E1012511

Page 2

ATI Serial # 803055

Attachments to Section 16311 Install Transformer at Fort Peck, MT

1	Cable Schedule & Cable Schedule Notes	6 Pages
a	Cables 11Y	
b	Cables 7PP	
c	Cable Schedule Notes	
2	Power Panel PP7 (in Switchyard #1)	2 Pages
3	Cable Termination sheets with notes	3 Pages
a	AT1	

FORT PECK DAM CABLE SCHEDULE

Cables 11Y Page 2 of 12

CABLE NO.	CONDUCTORS		CONDUIT		FUNCTION	FROM	TO	ROUTE	NOTE	CKT. VOLT	CABLE INS.	LENGTH	
	NO.	SIZE	NO.	SIZE								CABLE	CND.
11Y1	12/c	19/25			GCB 762 Control	Instr. Board Pnl. 6IB	GCB 762 Operating Cab.	Tray 5, Tunnel Tray T4, Y989-2B-MH-3, Y944-1A	1	125DC	1000V	650'	
11Y2	12/c	19/25			GCB 762 Control	Instr. Board Pnl. 6IB	GCB 762 Operating Cab.	Tray 5, Tunnel Tray T4, Y989-1B-MH-3, Y944-9A	1	125DC	1000V	650'	
11Y3	4/c	19/25			Autotransformer AT1 Differential CT's	GCB 762 Operating Cab.	Instr. Board Pnl. 6IB	11Y3-MH3, Y1019, Tunnel Tray T4, Tray 5, 2B	1		1000V	650'	
			11Y3	2"	For Cable 11Y3	GCB 762 Operating Cab.	Manhole 3		4				100'
11Y5	2-6/c	19/25			D.S. 763 Interlocks	D.S. 763 Aux. Switch	GCB 762 Operating Cab.	Y944-6A	1	125DC			
11Y6	2-6/c	19/25			D.S. 761 Interlocks	D.S. 761 Aux. Switch	GCB 762 Operating Cab.	Y944-7A	1	125DC			
11Y7	2-1/c	19/25			G.S. 760 Interlocks	Ground Switch 760 Aux. Sw.	GCB 762 Operating Cab.	Y944-5A	1	125DC			
11Y8A	7/c	19/25	Y979-4A	1-1/2"	Line 1 Sync. Instr. and Data Potential	Line 1 Potential Device Ph. A	Potential Term. Box Igk on Line 1 Ph. B Pot. Dev. Stand	Y979-4A	1, 4	120AC	1000V	30'	26'
11Y8B	7/c	19/25	Y979-5A	1-1/2"	Line 1 Sync. Instr. and Data Potential	Line 1 Potential Device Ph. B	Potential Term. Box Igk on Line 1 Ph. B Pot. Dev. Stand	Y979-5A	1, 4	120AC	1000V	15'	10'
11Y8C	7/c	19/25	Y979-6A	1-1/2"	Line 1 Sync. Instr. and Data Potential	Line 1 Potential Device Ph. C	Potential Term. Box Igk on Line 1 Ph. B Pot. Dev. Stand	Y979-6A	1, 4	120AC	1000V	30'	26'
11Y9	Coax				Line 1 Telem. Superv. and Voice	Line 1 Potential Device Ph. A	Carrier Current Cab. El. 2085	Y979-4A-Pull Box, Y979-3A-MH-3, Y1125-1B, Tunnel Tray T4, Trays 5 & 1	1			750'	
11Y10	Coax				Line 1 Relaying	Line 1 Potential Device Ph. C	Carrier Current Cab. El. 2085	Y979-6A-Pull Box, Y979-3A-MH-3, Y1125-1B, Tunnel Tray T4, Trays 5 & 1	1			750'	
11Y11	12/c	19/25			MOD 769 Control	Instr. Board Pnl. 6IB	MOD 769 Operating Cab.	Tray 5, Tunnel Tray T4, Y979-2B-MH-3, Y944-4A	1	125DC	1000V	600'	
11Y12	5-1/c	12			MOD 769 Interlocks	MOD 769 Operating Cab.	GCB 762 Operating Cab.	B311-1A	1	125DC	1000V		
11Y13	7/c	19/25			Line 1 Sync. Instr. and Data Potential	Line 1 Term. Box Y3A in Tunnel	Instr. Board Pnl. 6IB	Tunnel Tray T4, Tray 5	1	120AC	1000V	550'	
11Y13A	7/c	19/25			Line 1 Sync. Instr. and Data Potential	Pot. Term. Box Igk on Line 1 Ph. B Pot. Dev. Stand	Line 1 Term. Box Y3A in Tunnel	Y979-3A-MH-3, Y1125-1B, Tunnel Tray 4	1	120AC	1000V	450'	
11Y14	4/c	19/25			AT1 Diff. CT's	AT1 Terminal Box	Instr. Board Pnl. 6IB	Y987-1A-MH-3, Y991-1B, Tunnel Trays 4, 5 & 2B	1	120AC	1000V	600'	
11Y15	7/c	19/25			MOD 721 Control	Instr. Board Pnl. 6IB	MOD 721 Control Cab.	Tray 4, Tunnel Tray T4, Y1017-MH-3, 11Y15	1	125DC	1000V	570'	
			11Y15	2"	For Cables 11Y15, B40A	MOD 721 Control Cab.	Manhole 3		4				20'
11Y16	4/c	19/25			115 kV Tie Line Instr. and Data Current	Autotransformer AT1 Terminal Box	Instr. Board Pnl. 6IB	Y984A-MH-3, Y984B, Tunnel Tray T4, Trays 5, 2B	3		1000V	600'	

See Attached Cable Schedule Notes located behind the schedules

CABLE NO.	CONDUCTORS		CONDUIT		FUNCTION	FROM	TO	ROUTE	NOTE	CKT. VOLT	CABLE INS.	LENGTH	
	NO.	SIZE	NO.	SIZE								CABLE	CND.
11Y17	4/c	19/22			Polarizing and Ground Relaying Current	Autotransformer AT1 Terminal Box	Relay Board Pnl. 6RB	Y986A-MH-3, Y985B, Tunnel Tray T4, Trays 5, 2B, 2A	3		1000V	600'	
11Y18	4/c	19/22			Line 1 Relaying Current	Autotransformer AT1 Terminal Box	Relay Board Pnl. 14RB	Y985-1A-MH-3, Y985-1B, Tunnel Tray T4, Trays 5, 4 & 4A	3		1000V	600'	
11Y19	7/c	19/25			Sudden Pressure Trip	Autotransformer AT1 Terminal Box	Relay Board Pnl. 3RB	Y987-2A-MH-3, Y991-1B, Tunnel Tray T4, Trays 5, 2B, 2A	3	125DC	1000V	600'	
11Y20	7/c	19/25	11Y20	2"	230/161 kV Bus Potential Line 1 Relaying and Synch.	230/161 kV Bus Potential Line 1 Relaying and Synch.	New Capacitor Voltage Transformers Autotransformer AT1 Terminal Box	11Y20 , Y983A-MH-3, Y983B, Tunnel Tray T4, Trays 5 & 2B	8	120AC	1000V	600' + 105'	105'
11Y21	9/c 24/c	16			RTD Leads	Autotransformer AT1 Terminal Box	Recorder Board Pnl. 3RIB	Y988A-MH-3, Y988B, Tunnel Tray T4, Trays 5 & 2B	10		300V	600'	
11Y22	12/c 24/c	16			AT1 Annunciation	Autotransformer AT1 Terminal Box	Instr. Board Pnl. 6IB	Y987-1A-MH-3, Y987-1B, Tunnel Tray T4, Trays 5 & 2B	11	125DC	600V	600'	
11Y23	4/c	19/22			Reactor CT Leads	161 kV Reactor	Relay Board Pnl. 3RB	Y991-1A-MH-3, Y991-1B, Tunnel Tray T4, Trays 5, 2B, 2A	1		1000V	600'	
11Y24	9/c	19/25			Reactor Temp. and Sudd. Press. Alarm and Sudd. Press. Control	161 kV Reactor	Relay Board Pnl. 3RB	Y989-1A-MH-3, Y1017, Tunnel Tray T4, Trays 5, 2B, 2A	1	125DC	1000V	600'	
11Y25	4/c	19/25			Polarizing Current Inter-tie	Relay Board Pnl. 6RB	Relay Board Pnl. 10RB	Tray 1A	1	120AC	1000V	15'	
11Y26	4/c	19/25			Line 1 Relaying CT's	Relay Board Pnl. 14RB	Instr. Board Pnl. 6IB	Trays 1A, 1B	1	120AC	1000V	30'	
11Y27	4/c	19/25			Line 1 Carrier Oscillograph Points	Relay Board Pnl. 14RB	Relay Board Pnl. 6RB	Tray 1A	1	125DC	1000V	30'	
11Y28	12/c	19/25			Line 1 Carrier Relaying	Relay Board Pnl. 6RB	Carrier Set, Carrier Room	Tray 2A, 2, (, Access Floor, Conduit Sleeve	1	125DC	1000V	180'	
11Y29	4/c	19/25			Line 1 Line Potential Osc. Points	Relay Board Pnl. 14RB	Instr. Board Pnl. 6IB	Trays 1A, 1B	1	120AC	1000V	58'	

CABLE NO.	CONDUCTORS		CONDUIT			FUNCTION	FROM	TO	ROUTE	NOTE	CKT. VOLT	CABLE INS.	LENGTH	
	NO.	SIZE	NO.		SIZE								CABLE	CND.
7PP1	3	8				AutoTransformer AT1, Fans & Heaters A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 9	AutoTransformer AT1 Terminal Box	Y982C, Tunnel Tray T4, Y982B, MH3, Y982A	2	240	600V	425'	
			Y982C		2"	For Cables 7PP1, 7PP2 & 7PP31	Swyd. Pwr. Pnl. PP7 Pull Box	Swyd. Cable Tunnel Tray		4				
			Y982B		2"	For Cable 7PP1	Swyd. Cable Tunnel Tray T4	Swyd. Manhole 3		4				
			Y982A		2"	For Cable 7PP1	Swyd. Manhole 3	AutoTransformer AT1 Terminal Box		4				
7PP1A	2	10				Reactor Nitrogen Heaters	AutoTransformer AT1 Terminal Box	Reactor Nitrogen Heaters	conduit	1	120	600V	50'	
7PP2	3	6				Transformer T-3 Cooling Fans & Nitro Cab Heaters, A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 3	Transformer T-3 Nitro Cab Heaters D.S. in Tunnel	Y982C, Tunnel Tray T3	1	240	600V	335'	
7PP2A	3	8				Transformer T-3 Fans A.C. Feeder	Transformer T-3 Disc. Sw. in Tunnel	Transformer T-3, Ph. B Terminal Box	T-3, 7PP2	1	240	600V	30'	
			7PP2		1-1/2"	For Cables 7PP2 & 7PP28	Swyd. Cable Tunnel Tray T3	Transformer T-3, Ph. B Terminal Box		1				17'
7PP3	2	8				Transformer T-3 Cooling Fans A.C. Feeder, Ph. A	Transformer T-3, Ph. B Terminal Box	Transformer T-3 Cooling Fans, Ph. A	7PP3	1	240	600V	35'	
			7PP3		1"	For Cables 7PP3 & 7PP29	Transformer T-3, Ph. B Terminal Box	Transformer T-3, Ph. A Terminal Box		1				30'
7PP4	2	8				Transformer T-3 Cooling Fans A.C. Feeder, Ph. C	Transformer T-3, Ph. B Terminal Box	Transformer T-3 Cooling Fans, Ph. C	7PP4	1	240	600V	35'	
			7PP4		1"	For Cables 7PP4 & 7PP30	Transformer T-3, Ph. B Terminal Box	Transformer T-3, Ph. C Terminal Box		1				30'
7PP5	3	6				Transformer T-5 Cooling Fans & Pumps A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 10	Transformer T-5 Terminal Box	7PP5, Tunnel Tray T4, 7PP5A	1	240	600V	425'	
			7PP5		2"	For Cables 7PP5 & 7PP6	Swyd. Pwr. Pnl. PP7	Swyd. Cable Tunnel Tray		1				
			7PP5A		1-1/2"	For Cable 7PP5	Swyd. Cable Tunnel Tray T4	Transformer T-5 Terminal Box		1				120'
7PP6	3	8				Transformer T-4 Cooling Fans & Nitro Cab Heaters, A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 4	Transformer T-4 Nitro Cab Heaters D.S. in Tunnel	7PP5, Tunnel Tray T4	1	240	600V	410'	
7PP6A	3	8				Transformer T-4 Cooling Fans, A.C. Feeder	Transformer T-4 Fan Disc. Sw. in Tunnel Ckt. 4	Transformer T-4 Cooling Fans, Ph. A, B, C & Spare	Tunnel Tray T4, 830, 7PP7, 7PP8 & 7PP9	1	240	600V	80'	
			830		1-1/2"	For Cables 7PP6A & 7PP7	Swyd. Cable Tunnel Tray T4	Transformer T-4 Cooling Fans, Ph. C		1				10'
			7PP7		1-1/2"	For Cables 7PP6A & 7PP7	Transformer T-4 Cooling Fans, Ph. C	Transformer T-4 Cooling Fans, Ph. B		1				30'
			7PP8		1-1/2"	For Cables 7PP6A & 7PP7	Transformer T-4 Cooling Fans, Ph. B	Transformer T-4 Cooling Fans, Ph. A		1				30'

CABLE NO.	CONDUCTORS		CONDUIT		FUNCTION	FROM	TO	ROUTE	NOTE	CKT. VOLT	CABLE INS.	LENGTH	
	NO.	SIZE	NO.	SIZE								CABLE	CND.
			7PP9	1-1/2"	For Cables 7PP6A & 7PP7	Transformer T-4 Cooling Fans, Ph. A	Transformer T-4 Cooling Fans, Spare Ph.		1				35'
7PP7	3	8			Transformer T-4 Nitro Cab Heaters, A.C. Feeder	Transformer T-4 Nitro Cab Heaters D.S. in Tunnel	Transformer T-4 Nitro Cab Heaters, Ph. A, B, C & Spare	Tunnel Tray T4, 61A, 7PP7, 7PP8 & 7PP9	1	240	600V	80'	
7PP10	3	6			OCB 762 Compr. & Heaters A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 5	OCB 762 Terminal Box	944-1C, Tunnel Tray T5, 944-1B, 944-8A	1	240	600V	425'	
			Y944-1C		For Cable 7PP10	Swyd. Pwr. Pnl. PP7	Swyd. Cable Tunnel Tray		1				
			Y944-1B		For Cable 7PP10	Swyd. Cable Tunnel Tray T5	Swyd. Manhole 3		1				
			Y944-8A		For Cable 7PP10	Swyd. Manhole 3	OCB 762 Terminal Box		1				
7PP11	3	6	7PP11	1"	Lighting Transformer T-8 A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 6	Lighting Transformer T-8	7PP11	1	240	600V	10'	3'
7PP12	4	6	7PP12	1"	Lighting Panel LP7 A.C. Feeder	Lighting Transformer T-8	Lighting Panel LP7	7PP12	1	240	600V	10'	5'
7PP13	3	1/0			OCB's 1572, 1672, 1676 Compr. & Heater A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 7	OCB 1572 Terminal Box	74, Tunnel Tray T4, 951, MH1, 61	1	240	600V	475'	
			74	1-1/2"	For Cable 7PP13	Swyd. Pwr. Pnl. PP7	Swyd. Cable Tunnel Tray		1				
			951	4" P	For Cables 7PP13 & 7PP16	Swyd. Cable Tunnel Tray	Swyd. Manhole 1		1				
			61	2"	For Cable 7PP13	Swyd. Manhole 1	OCB 1572 Terminal Box		1				
7PP14	3	1/0	3	1-1/2"	OCB's 1572, 1672, Compr. & Heater A.C. Feeder	OCB 1572 Terminal Box, Ckt. 7	OCB 1672 Terminal Box	3	1	240	600V	55'	
7PP15	3	1/0	4	1-1/2"	OCB's 1676 Compr. & Heater A.C. Feeder	OCB 1672 Terminal Box, Ckt. 7	OCB 1676 Terminal Box	4	1	240	600V	50'	
7PP16	3	1/0			OCB's 1576, 776, 772, 1142 Compr. & Heater A.C. Feeder	Swyd. Pwr. Pnl. PP7, Ckt. 8	Terminal Boxes in MH1	82, Trays T4, 951, MH1	1	240	600V	415'	
			82	1-1/2"	For Cable 7PP16	Swyd. Pwr. Pnl. PP7	Swyd. Cable Tunnel Tray		1				
7PP17	3	1/0			OCB's 1576, 1142 Compr. & Heater A.C. Feeder	Terminal Boxes in MH1	OCB 1576 Terminal Box	59, 50	1	240	600V	70'	
			59	2"	For Cable 7PP17	Swyd. Manhole 1	Box K5		1				
			50	1-1/2"	For Cable 7PP17	Box K5	OCB 1576 Terminal Box		1				
7PP18	3	1/0	2	2"	OCB's 1142 Compr. & Heater A.C. Feeder	OCB 1576 Terminal Box, Ckt. 8	OCB 1142 Terminal Box	2	1	240	600V	140'	
7PP19	3	1/0			OCB's 776, 772 Compr. & Heater A.C. Feeder	Terminal Boxes in MH1	Terminal Boxes in MH2	10Y23	1	240	600V	115'	
			10Y23	2"	For Cable 7PP19	Swyd. Manhole 1	Swyd. Manhole 2		1				
7PP20	3	1/0	Y5B	2"	OCB's 772 Compr. & Heater A.C. Feeder	Swyd. Manhole 2, Ckt. 8	OCB 772 Terminal Box	Y5B	1	240	600V	45'	

CABLE NO.	CONDUCTORS		CONDUIT		FUNCTION	FROM	TO	ROUTE	NOTE	CKT. VOLT	CABLE INS.	LENGTH	
	NO.	SIZE	NO.	SIZE								CABLE	CND.
7PP21	3	1/0	Y6B	2"	OCB's 776 Compr. & Heater A.C. Feeder	Swyd. Manhole 2, Ckt. 8	OCB 776 Terminal Box	Y6B	1	240	600V	50'	
7PP22	3	1/0	7PP22	1"	Swyd. Perimeter Lights Supply	Swyd. Pwr. Pnl. PP7, Ckt. 16	Swyd. Perimeter Lights	7PP22	1	240	600V		
7PP23	3	8			Floodlights 5 & 6 Supply	Swyd. Pwr. Pnl. PP7, Ckt. 13	Floodlights 1 & 2	7PP23, Tunnel Tray T3, L85, L84	1	240	600V	200'	
			7PP23	2"	For Cables 7PP23, 7PP24, 7PP25 & 7PP26	Swyd. Pwr. Pnl. PP7	Swyd. Cable Tunnel Tray T3		1				
7PP24	3	8			Floodlights 1, 2, 3 & 4 Supply	Swyd. Pwr. Pnl. PP7, Ckt. 15	OCB 1142 Bay Floodlights #1 & 2	7PP23, Tunnel Tray T3, L63, L65, L67, L69, L78	1	240	600V	350'	
7PP25	3	8			Tailrace Floodlights 10 & 11 Supply	Swyd. Pwr. Pnl. PP7, Ckt. 13	Tailrace Floodlight	7PP23, Tunnel Tray T3, 88B	1				
			88B	3/4"	For Cable 7PP25	Tunnel Tray T3	Tailrace Floodlight		1	240	600V	160'	
7PP26	3	8			Floodlights 7, 8 & 9 Supply	Swyd. Pwr. Pnl. PP7, Ckt. 14	Floodlights 7, 8 & 9	7PP23, Tunnel Tray T3, Y990B, Y1125-1C	1	240	600V	430'	
7PP27	3	8			115 kV Transformer 3 & 4 Bay Floodlights Supply 3 & 4	Ckt. 15, Cable 7PP24 in Tunnel Tray T3 Below Cond. L63	Floodlights #3 & #4 115 kV Transformers 3 & 4 Bay	Tunnel Tray T3, Conduits L63, L64, L71, L72, 79, 72, L73, L74, L77	1	240	600V	300'	
7PP28	3	8			Transformer T-3 Nitro Cab. Heater A.C. Supply	Transformer T-3 Nitro Cab. Heater Disc. Sw. in Tunnel	Transformer T-3 Ph. B Nitro Cab. Heater	Tunnel Tray T3, 7PP2	1	240	600V	30'	
7PP29	2	8			Transformer T-3 Ph. A Nitro Cab. Heater A.C. Supply	Transformer T-3 Ph. B Nitro Cab. Heater	Transformer T-3 Ph. A Nitro Cab. Heater	7PP3	1	240	600V	35'	
7PP30	2	8			Transformer T-3 Ph. C Nitro Cab. Heater A.C. Supply	Transformer T-3 Ph. B Nitro Cab. Heater	Transformer T-3 Ph. C Nitro Cab. Heater	7PP4	1	240	600V	35'	
7PP31	3	8			Transformer T-2 Nitro Cab. Heater A.C. Supply	Swyd. Pwr. Pnl. PP7, Ckt. 12	Transformer T-2 Spare Ph. Nitro Cab. Heater	Y982C, Tunnel Tray T3, 7PP31	1	240	600V	290'	
			7PP31	1"	For Cable 7PP31	Transformer T-2 Ph. C Term. Cab.	Cable Tunnel		1				20'
7PP32	3	8			Transformer T-2 Ph. A & B Nitro Cab. Heater A.C. Supply	Transformer T-2 Ph. C Heaters	Transformer T-2 Ph. B Heaters	7PP32	1	240	600V	35'	
			7PP32	1"	For Cable 7PP32	Transformer T-2 Ph. C Term. Cab.	Transformer T-2 Ph. B Term. Cab.		1				20'
7PP33	2	8			Transformer T-2 Ph. A Nitro Cab. Heater A.C. Supply	Transformer T-2 Ph. B Heaters	Transformer T-2 Ph. A Heaters	7PP33	1	240	600V	35'	
			7PP33	1"	For Cable 7PP33	Transformer T-2 Ph. B Term. Cab.	Transformer T-2 Ph. A Term. Cab.		1				20'

CABLE SCHEDULE NOTES

- 1 Existing cable. No change required.
- 2 Existing cable. Cable will be reused with new transformer. Contractor shall pull existing cable back to nearest location from auto-transformer. The Contractor shall remove the existing auto-transformer. See Note 5 below. The Contractor shall install the new transformer. Finally, the Contractor shall pull back the existing cable and terminate in the new transformer cabinet.
- 3 Existing cable. Contractor shall remove and dispose the existing cable. See Note 5 below. After the new transformer has been installed, the Contractor shall install a new cable with same designation, no, size, function, from, to, and routing as the old existing cable had. The cable schedule length is within +/- 10% for the existing cable. The Contractor shall not use this for the new cable length but shall field measure the rerouted length for the new cable.
- 4 Existing conduit. No change required.
- 5 Existing conduit. Disconnect conduit from existing auto-transformer. After new transformer has been installed, revise (extend) the existing conduit to new transformer as shown or propose alternative routing.
- 6 Existing cable. The Contractor remove and dispose the existing cable. The cable shall not be replaced.
- 7 Existing conduit. Disconnect conduit from existing auto-transformer and cap below grade. This conduit is being abandoned in place.
- 8 Existing cable shall be removed and new cable shall be installed. Provide new conduit 11Y20 from new Capacitor Voltage Transformers to Manhole 3.
- 9 All control and instrument transformer cables shall be contiguous from terminal block to terminal block. No splicing shall be allowed.
- 10 Contractor shall remove and dispose the existing cable. New 24 conductor control cable shall have 8 twisted triads each with 100% shielded foil in contact with stranded tinned copper drain wire.
- 11 Contractor shall remove and dispose the existing cable. New 24 conductor control cable shall have overall 100% shielded foil in contact with stranded tinned copper drain wire. The Contractor shall provide and install a new 20-point 300v terminal block in Panel 6IB. Coordinate location with Contracting Officer.

POWER PANEL PP7						
This is Existing Schedule. Items that are crossed-out are to be removed.						
CIR. NO.	CIRCUIT DESIGNATION	LOAD	CIRCUIT BREAKER		CABLE SIZE	
			FRAME	TRIP		
1	Incoming Feeder		225		225	4/0
2	Spare		225		100	
3	115KV Transf. T-3, fans	21-1/3 HP (1Ph)	100		50	6
4	115KV Transf. T-4, fans	15-1/4 HP	100		50	8
5	GCB 762, Compr. & Heaters	9.24 KW	100		50	6
6	Switchyard Ltg. Panel LP7	15 KVA	100		50	6
7	GCB's 1572, 1672, 1676 Compr. & Htrs.	16.8KW	225		100	1/0
8	GCB's 1576, 776, 772, 1142 Compr. &	20.8 KW	225		100	1/0
9	Auto Transf. T-1 Fan & Htrs.	4-1HP + 2.3 KW	100		30	8
10	34.5 KV Transf. T-5 Pumps & Fans	2-1/2HP(1Ph), 2-1HP	100		30	6
11	Spare		100		30	
12	Spare		100		30	
100 Ampere Lighting Contactor with H-O-A Selector Switch						
13	Floodlights #5, #6 Tailrace #10 & #11	6.0 KW	100		20	8
14	Floodlights #7, #8, & #9	4.5 KW	100		20	8
15	Floodlights #1, #2, #3, & #4	6.0 KW	100		20	8
16	Switchyard Perimeter Lights	2.7 KW	100		20	8
17	Spare		100		30	
18	Spare		100		20	
240 Volt, 3 Phase, 3 Wire						

POWER PANEL PP7						
This is Revised Schedule. Items that are in bold are new.						
CIR. NO.	CIRCUIT DESIGNATION	LOAD	CIRCUIT BREAKER			CABLE SIZE
			FRAME		TRIP	
1	Incoming Feeder		225		225	4/0
2	Spare		225		100	
3	115KV Transf. T-3, fans	21-1/3 HP (1Ph)	100		50	6
4	115KV Transf. T-4, fans	15-1/4 HP	100		50	8
5	GCB 762, Compr. & Heaters	9.24 KW	100		50	6
6	Switchyard Ltg. Panel LP7	15 KVA	100		50	6
7	GCB's 1572, 1672, 1676 Compr. & Htrs.	16.8KW	225		100	1/0
8	GCB's 1576, 776, 772, 1142 Compr. &	20.8 KW	225		100	1/0
9	Transf. T-1 Fans	24-1/6 HP	100		30	8
10	34.5 KV Transf. T-5 Pumps & Fans	2-1/2HP(1Ph), 2-1HP	100		30	6
11	Spare		100		30	
12	Spare		100		30	
100 Ampere Lighting Contactor with H-O-A Selector Switch						
13	Floodlights #5, #6 Tailrace #10 & #11	6.0 KW	100		20	8
14	Floodlights #7, #8, & #9	4.5 KW	100		20	8
15	Floodlights #1, #2, #3, & #4	6.0 KW	100		20	8
16	Switchyard Perimeter Lights	2.7 KW	100		20	8
17	Spare		100		30	
18	Spare		100		20	

240 Volt, 3 Phase, 3 Wire

CABLE from AT1	CON DUC TOR	EXISTING DESIGNATION	EXISTING TERMINAL @ AT1	SEE NOTES BELOW	NEW TERMINAL @ T1
11Y16 to 6IB terminal block C2	1	T1		1	
	2	T2			
	3	T3			
	4	T0			
11Y17 to 6RB terminal block A2	1	ATGP3		2	
	2	ATGP2			
	3	ATGP1			
	4	ATGP4			
11Y18 to 14RB terminal block T4	1	ATC1		3	
	2	ATC2			
	3	ATC3			
	4	ATC0			
11Y19 to 3RB terminal block B2	1	P65			
	2	N65			
	3	P65C			
	4	P65D			
	5	SPARE			
	6	SPARE			
	7	SPARE			
11Y20 to 6IB terminal blocks E4 & F4	1	9C4		4	
	2	9C7			
	3	9C8			
	4	9C9			
	5	9C0			
	6	SPARE			
	7	SPARE			
11Y21 to 3RIB terminal block H2	1	TDC3		6	
	2	TDC3			
	3	TDC2			
	4	TDB2			
	5	TDA1			
	6	TDC1			
	7	TDA2			
	8	TDB2			
	9	SPARE			
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				
	21				
	22				
	23				
	24				

CABLE from AT1	CON DUC TOR	EXISTING DESIGNATION	EXISTING TERMINAL @ AT1	SEE NOTES BELOW	NEW TERMINAL @ T1
11Y22 to 6IB terminal block	1	P70		7	
	2	A1101A			
	3	A1101B			
	4	A1102			
	5	A1103			
	6	A1103A			
	7	A1103B			
	8	A1103C			
	9	SPARE			
	10	SPARE			
	11	SPARE			
	12	SPARE			
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				
	21				
	22				
	23				
	24				
7PP1 to Circuit No. 7PP-9	1	A			73
	2	B			74
	3	C			75
	4				

NOTES:

- 0 For NEW transformer terminal connections reference drawing 713513 sheet I1, LIST OF DRAWINGS.
- 1 See FIO drawing MFP-OPN83E306B.9 CT's 3-600/5 Y, 115kV bushings of the transformer. See drawing 713513 Sheet Z12.
- 2 See FIO drawing MFP-OPN83E306B.9 CT's 3-1200/5 Y, 13.8kV bushings of the transformer. See drawing 713513 Sheet Z12.
- 3 See FIO drawing MFP-OPN83E306C.5 CT's 3-400/5 Y, 230/161kV bushings of the transformer. See drawing 713513 Sheet Z12.
- 4 See FIO drawing MFP-OPN83E306B.9 the 3 existing capacitance bushing tap potential devices will be replaced with the 3 new government furnished capacitor voltage transformers, Tench TEVF161/230.
- 5 See contract drawing MFP211-093E8 sheet E-8 for the phasing connections to the new transformer.

NOTES:

(continued)

- 6 The existing cable was 9 conductors and the new cable shall be 24 conductors as 8 triads with individual shields.
- 7 The Contractor shall replace the existing 12 conductors cable with a new 24 conductors cable which has an over-all shield. The Contractor shall provide and install a new 12-point 300 volt terminal block in Panel 6IB. The Contractor shall coordinate location for the new terminal block with the Contracting Officer. The Contractor shall terminal all conductors on terminal blocks on each end.

**PHOTO NO. 1
EXISTING AUTO-TRANSFORMER NO. 1**

NOTES:

1. THE CONTRACTOR SHALL REMOVE THE EXISTING AUTO-TRANSFORMER NO. 1.
2. APPROXIMATE LOCATION WHERE PHOTO NO. 1 WAS TAKEN.



3. THE EXISTING PHASING IS C - B - A AS MARKED ON THE PHOTO NO. 2. THE CONTRACTOR SHALL TRANSPOSE THE 3" COPPER TUBING SO THAT WHILE FACING THE NORTH SIDE OF THE NEW TRANSFORMER THE FINAL PHASING SHALL BE A - B - C.

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE SUB-CONTRACTORS OF THE ABOVE.

\$\$ - THINK VALUE ENGINEERING - \$\$

Revisions

Symbol	Descriptions	Date	Approved
	AMENDMENT NO. 1 - ADDED PHOTO2 & NOTE 3	02/20/03	R. J. B.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by:
Richard T. LaFeria
(402)-221-4448

MISSOURI RIVER
FORT PECK DAM, FORT PECK LAKE
SWITCH YARD 1
INSTALL TRANSFORMER
SWITCHYARD NO. 1
CONDUIT AND GROUNDING
SHEET 2, REMOVAL

Submitted by:	Plot Scale Ratio: 8 : 1	Date: FEB 2003	Sheet reference number: E-3
	Design File: FP25530A.DGN	Drawing Code: MFP211-093 E3	
Date:	Spec. No.: DACW 45 03-B-0006	Contract No.: DACW 45	
Chief: Electrical Section			

1" = 1'-0"
10' 15'

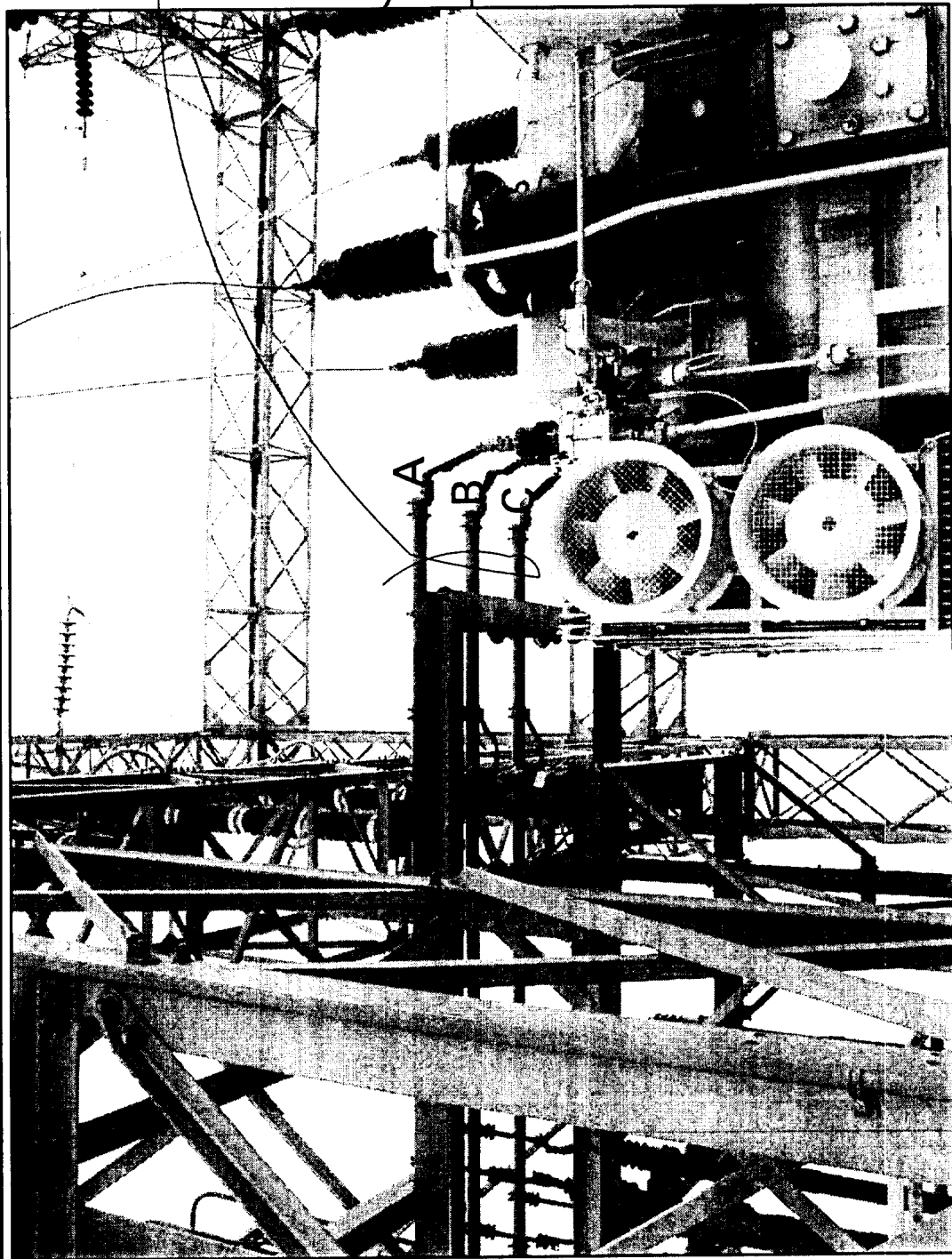


PHOTO NO.2
 EXISTING AUTO-TRANSFORMER NO.1
 VIEW OF 13.8KV TERTIARY BUS CONNECTIONS

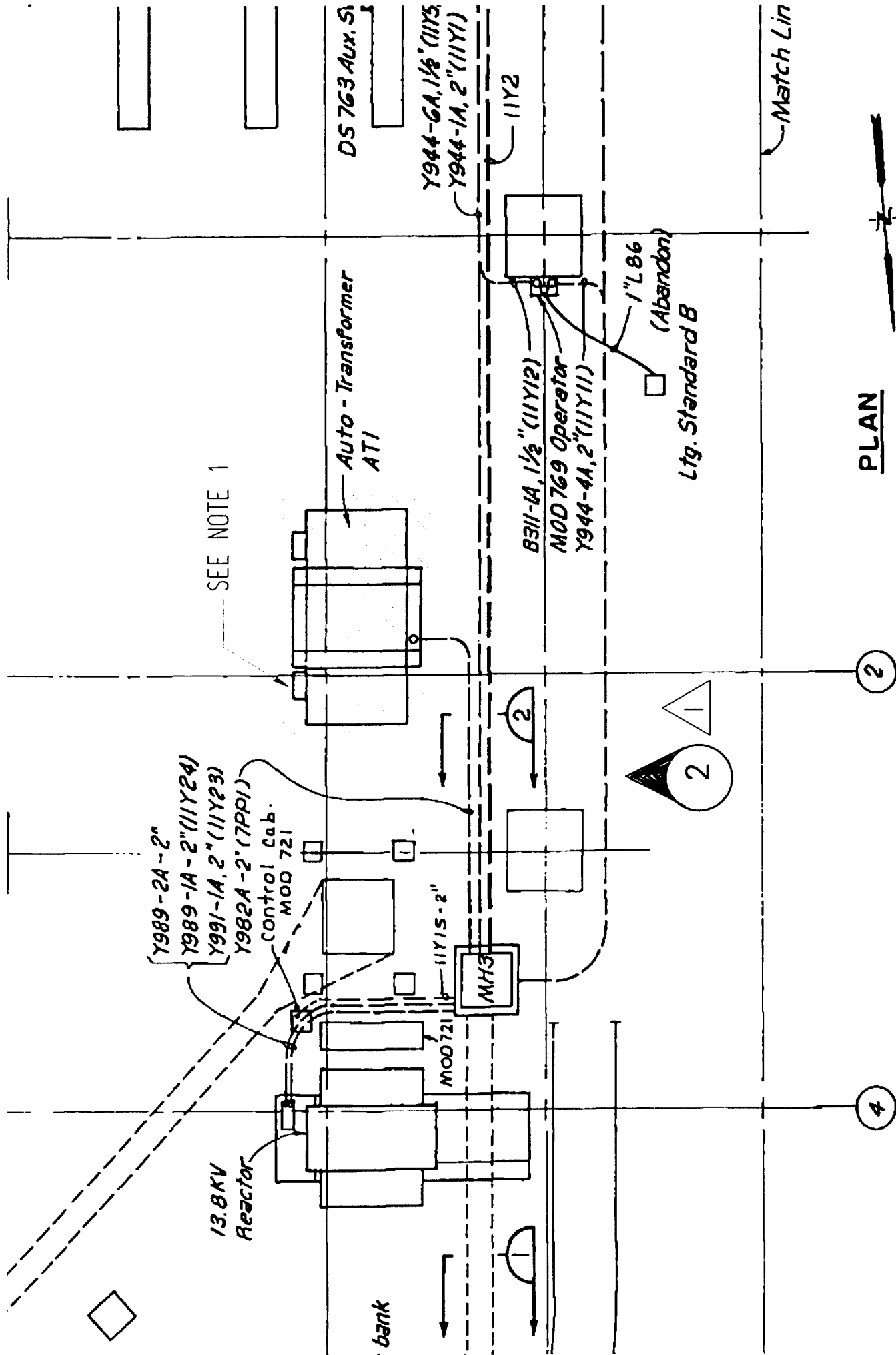


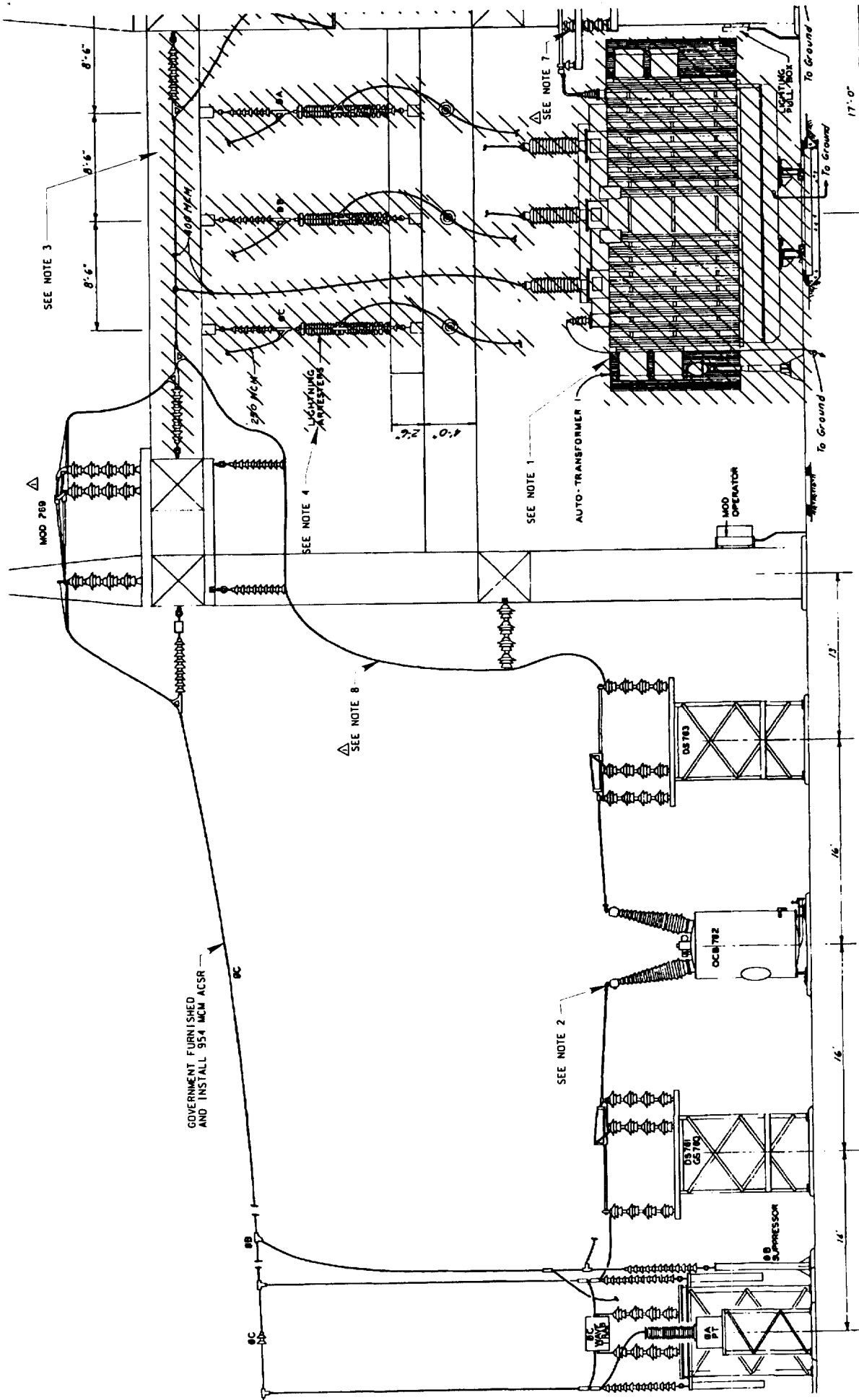
A

SEE NOTE 2

1

Amendment 1 drawing MFP211-93E-3





NOTES:

1. THE CONTRACTOR SHALL REMOVE THE EXISTING AUTO-TRANSFORMER NO. 1.
2. THIS DRAWING HAS NOT BEEN UPDATED TO SHOW THE NEW GAS CIRCUIT BREAKERS (GCB). THE OLD CIRCUIT BREAKERS ARE BEING REPLACED WITH A MITSUBISHI ELECTRIC POWER PRODUCTS TYPE 200-SENT-40E/40HE DESIGNATED AS GCB 762 AT THE SAME TIME THESE DRAWINGS ARE BEING PREPARED.
3. THE CONTRACTOR SHALL REMOVE THE UPPER LEVEL 161KV BUS FOR REUSE AS A 115KV BUS WHICH WILL BE ORIENTED 90° FROM ITS PRESENT POSITION. SEE SHEETS E-10, E-11, & E-13.
4. THE CONTRACTOR SHALL REMOVE EXISTING 115 KV LIGHTING ARRESTERS.
5. THE CONTRACTOR SHALL REMOVE EXISTING 161 KV LIGHTING ARRESTERS.
6. SEE FOR INFORMATION ONLY DRAWING MFP-OPN93E105.3 FOR WHERE THIS SECTION CUT IS MADE.
7. THE CONTRACTOR SHALL REMOVE THE EXISTING 13.8KV SURGE ARRESTERS.
8. THE CONTRACTOR SHALL REMOVE THE EXISTING 161KV CABLE AND REPLACE WITH 954 MCM ACSR CABLE.

SECTION 28 103126 SEE NOTE 6

SCALE 1/2" = 1' 0"

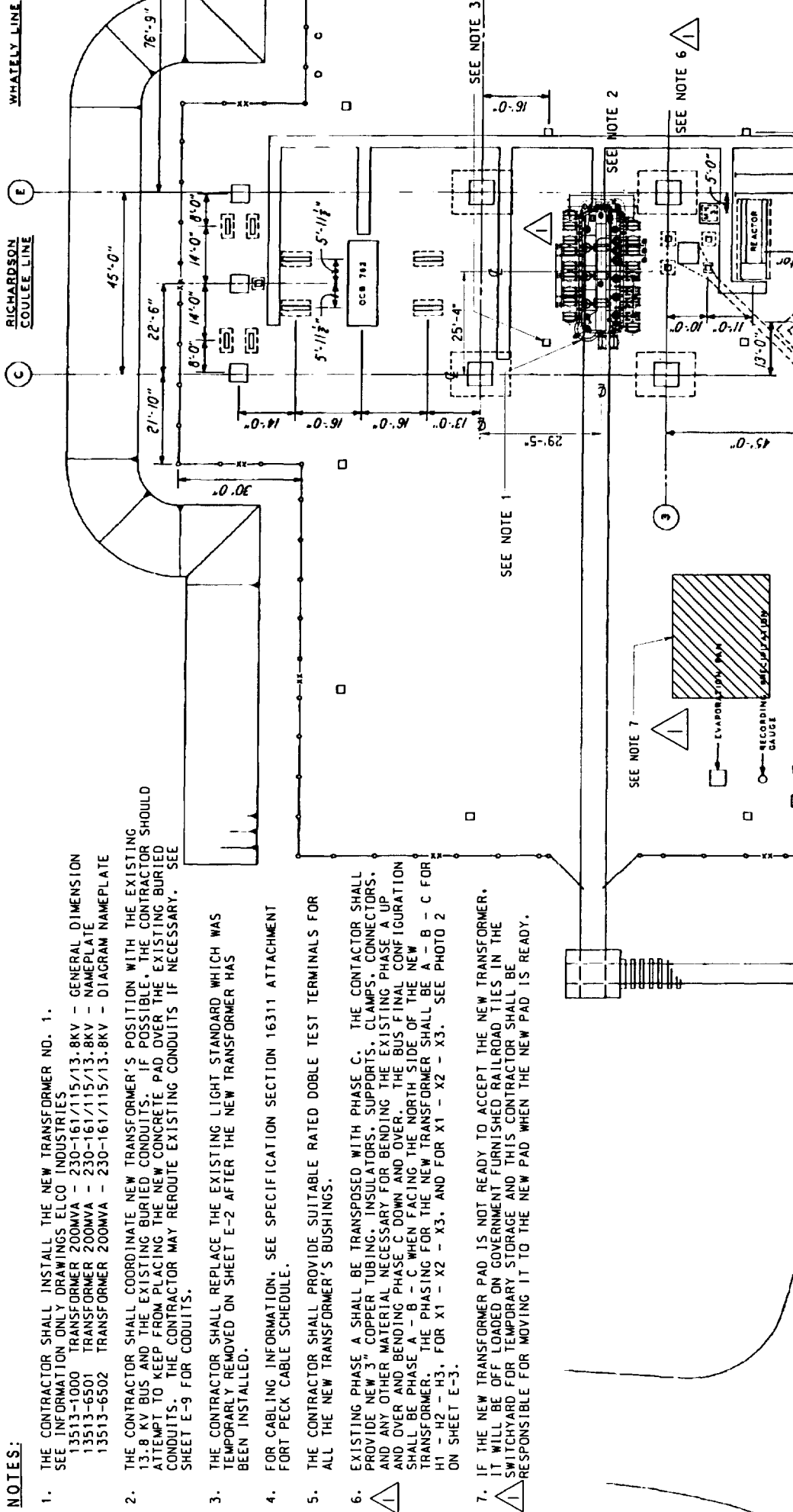
ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE C
 METRIC DRAWING SIZE OF 300mm X 600mm IF ANY OTHER SIZE OR
 PAPER IS USED THE CONTRACTOR SHALL ADJUST THE SCALE
 THE CONTRACTOR SHALL ALSO ADVISE SUB-CONTRACTORS OF THE

\$\$\$ - THINK VALUE ENGINEERING

Amendment 1 drawing MFP211-93E-4

NOTES:

1. THE CONTRACTOR SHALL INSTALL THE NEW TRANSFORMER NO. 1.
SEE INFORMATION ONLY DRAWINGS ELCO INDUSTRIES
13513-1000 TRANSFORMER 200MVA - 230-161/115/13.8KV - GENERAL DIMENSION
13513-6501 TRANSFORMER 200MVA - 230-161/115/13.8KV - NAMEPLATE
13513-6502 TRANSFORMER 200MVA - 230-161/115/13.8KV - DIAGRAM NAMEPLATE
2. THE CONTRACTOR SHALL COORDINATE NEW TRANSFORMER'S POSITION WITH THE EXISTING 13.8 KV BUS AND THE EXISTING BURIED CONDUITS. IF POSSIBLE, THE CONTRACTOR SHOULD ATTEMPT TO KEEP FROM PLACING THE NEW CONCRETE PAD OVER THE EXISTING BURIED CONDUITS. THE CONTRACTOR MAY REROUTE EXISTING CONDUITS IF NECESSARY. SEE SHEET E-9 FOR CONDUITS.
3. THE CONTRACTOR SHALL REPLACE THE EXISTING LIGHT STANDARD WHICH WAS TEMPORARILY REMOVED ON SHEET E-2 AFTER THE NEW TRANSFORMER HAS BEEN INSTALLED.
4. FOR CABLING INFORMATION, SEE SPECIFICATION SECTION 16311 ATTACHMENT FORT PECK CABLE SCHEDULE.
5. THE CONTRACTOR SHALL PROVIDE SUITABLE RATED DOBLE TEST TERMINALS FOR ALL THE NEW TRANSFORMER'S BUSHINGS.
6. EXISTING PHASE A SHALL BE TRANSPOSED WITH PHASE C. THE CONTACTOR SHALL PROVIDE NEW 3" COPPER TUBING, INSULATORS, SUPPORTS, CLAMPS, CONNECTORS, AND ANY OTHER MATERIAL NECESSARY FOR BENDING THE EXISTING PHASE A UP AND OVER AND BENDING PHASE C DOWN AND OVER. THE BUS FINAL CONFIGURATION SHALL BE PHASE A - B - C WHEN FACING THE NORTH SIDE OF THE NEW TRANSFORMER. THE PHASING FOR THE NEW TRANSFORMER SHALL BE A - B - C FOR H1 - H2 - H3, FOR X1 - X2 - X3, AND FOR X1 - X2 - X3. SEE PHOTO 2 ON SHEET E-3.
7. IF THE NEW TRANSFORMER PAD IS NOT READY TO ACCEPT THE NEW TRANSFORMER, IT WILL BE OFF LOADED ON GOVERNMENT FURNISHED RAILROAD TIES IN THE SWITCHYARD FOR TEMPORARY STORAGE AND THIS CONTRACTOR SHALL BE RESPONSIBLE FOR MOVING IT TO THE NEW PAD WHEN THE NEW PAD IS READY.



NOTES:

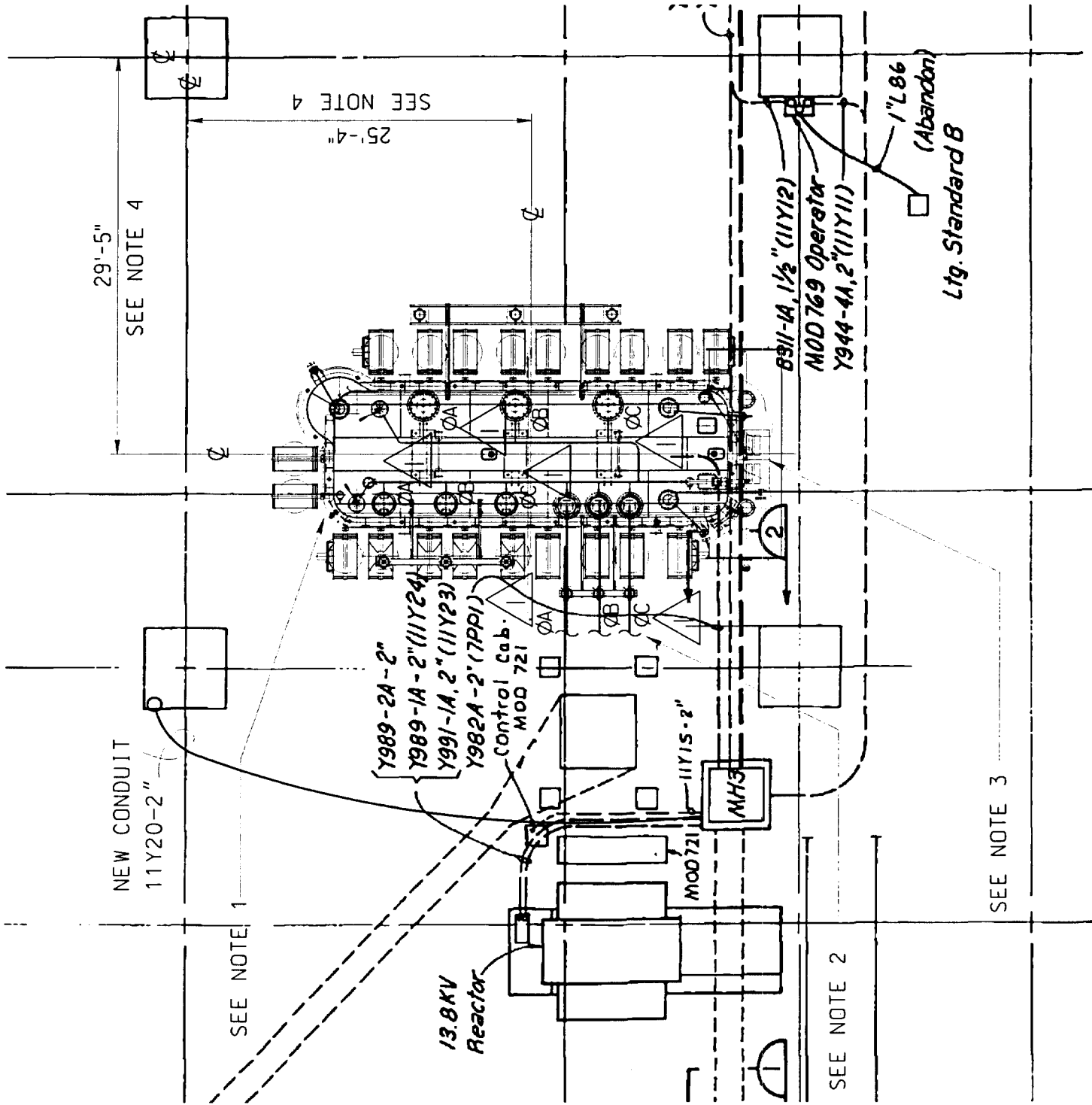
1. THE CONTRACTOR SHALL INSTALL THE NEW TRANSFORMER NO. 1.
SEE INFORMATION ONLY DRAWINGS ELCO INDUSTRIES

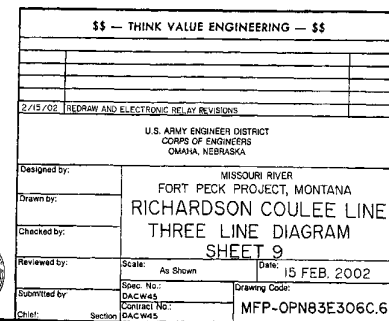
13513-1000 TRANSFORMER 200MVA - 230-161/115/13.8KV - GENERAL DIMENSION
13513-6501 TRANSFORMER 200MVA - 230-161/115/13.8KV - NAMEPLATE
13513-6502 TRANSFORMER 200MVA - 230-161/115/13.8KV - DIAGRAM NAMEPLATE

2. THE CONTRACTOR SHALL EXTEND THE EXISTING 3" IPS COPPER TUBES FROM THE 13.8 KV BUS STRUCTURE. THE CONTRACTOR SHALL PROVIDE AND INSTALL SUITABLE LAPP DOBLE TEST TERMINALS ON THE NEW TRANSFORMER 13.8 KV BUSHING. EXISTING PHASE A SHALL BE TRANSPOSED WITH PHASE C. THE CONTRACTOR SHALL PROVIDE NEW 3" COPPER TUBING, INSULATORS, SUPPORTS, CLAMPS, CONNECTORS, AND ANY OTHER MATERIAL NECESSARY FOR BENDING THE EXISTING PHASE A UP AND OVER AND BENDING PHASE C DOWN AND OVER. THE BUS FINAL CONFIGURATION SHALL BE PHASE A - B - C WHEN FACING THE NORTH SIDE OF THE NEW TRANSFORMER.

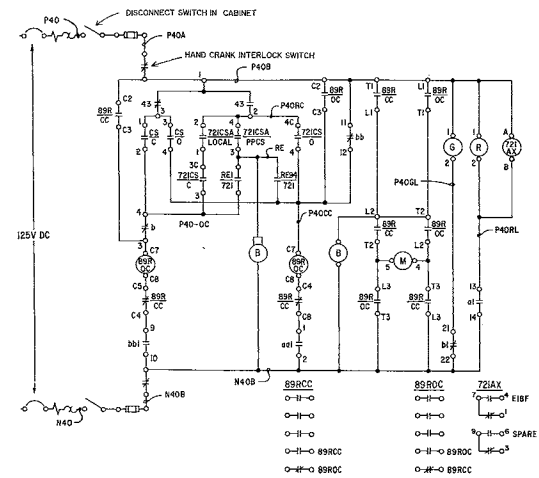
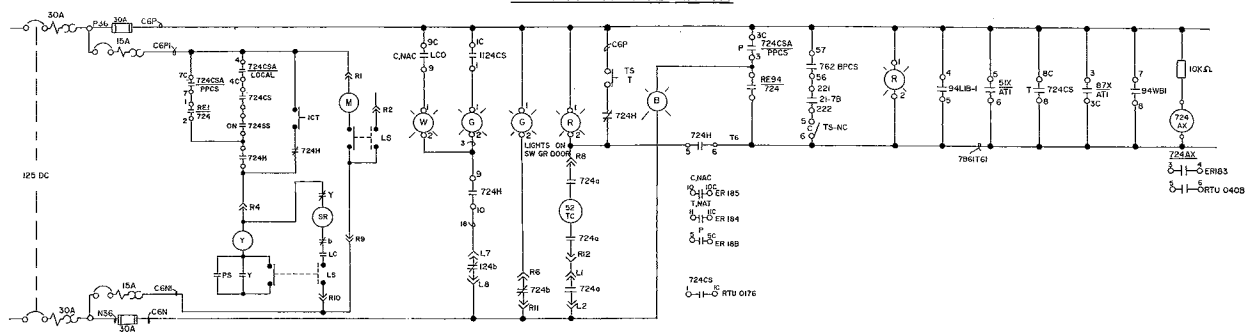


3. THE CONTRACTOR SHALL RELOCATE EXISTING CONDUITS TO NEW TRANSFORMERS CONTROL CABINET. THE CONTRACTOR MAY ADJUST THE TRANSFORMER POSITION AS NECESSARY FOR CONNECTION OF THE CONTROL CONDUITS. HOWEVER, THIS MAY REQUIRE ADJUSTMENTS FOR THE INSTALLATION OF THE 3" IPS COPPER TUBES FOR THE 13.8 KV BUS AS REQUIRED BY NOTE 2 ABOVE.
4. THE CONTRACTOR SHALL DOCUMENT CHANGES IN THESE DIMENSIONS AS NECESSARY FOR ADJUSTMENT WHICH HE MAKES IN REGARDS TO ABOVE NOTE 3.
5. FOR CABLING INFORMATION, SEE SPECIFICATION SECTION 16311 ATTACHMENT FORT PECK CABLE SCHEDULE.
6. THE CONTRACTOR SHALL INSTALL NEW CONTRACTOR FURNISHED PROTECTIVE RELAYS ON A NEW PANEL TO REPLACE EXISTING RELAY BOARD PANEL 3RB IN THE CONTROL ROOM. THE GOVERNMENT WILL FURNISH A NEW STEEL PANEL AND 19" MOUNTING RACK FOR THE NEW RELAYS. THE CONTRACTOR SHALL SUBMIT NEW POINT-TO-POINT WIRING FOR THE NEW PANEL SIMILAR TO EXISTING GOVERNMENT DRAWING. ALL OTHER EXISTING DEVICES (NOT TRANSFORMER PROTECTIVE RELAYS) MUST BE RELOCATED ONTO THE NEW PANEL 3RB BY THE CONTRACTOR. THE POINT-TO-POINT WIRING MUST SHOW ALL THE EXISTING RELOCATED EQUIPMENT. SEE FOR INFORMATION ONLY DRAWINGS MFP-OPN83E910.6, MFP-OPN83E937B.6, AND MFP-OPN83E937C.3.



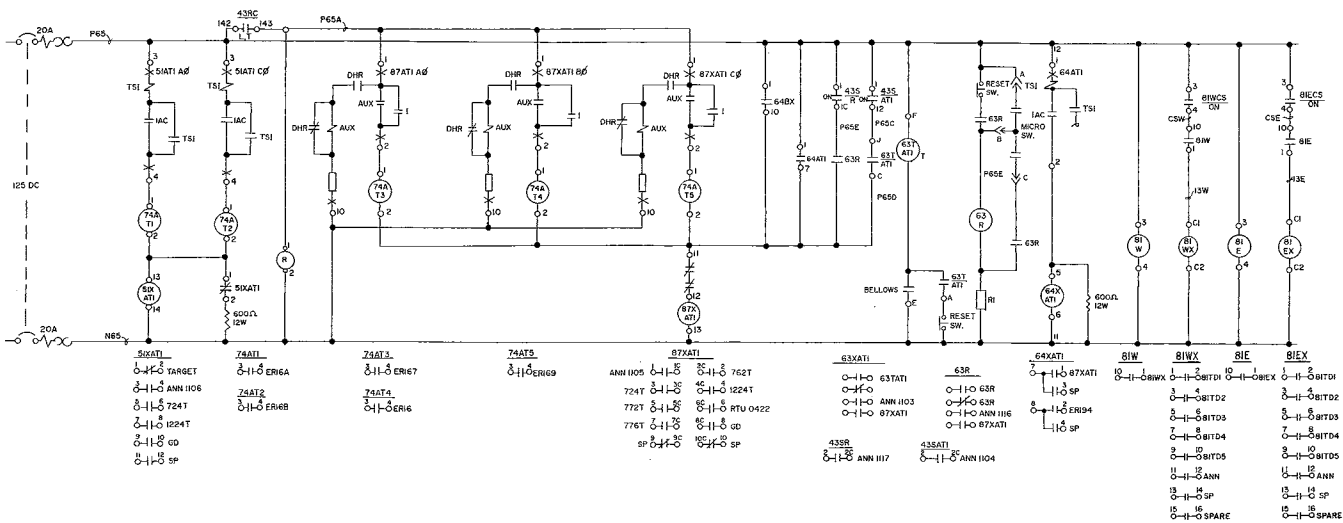


VCB 724 CONTROL CIRCUIT

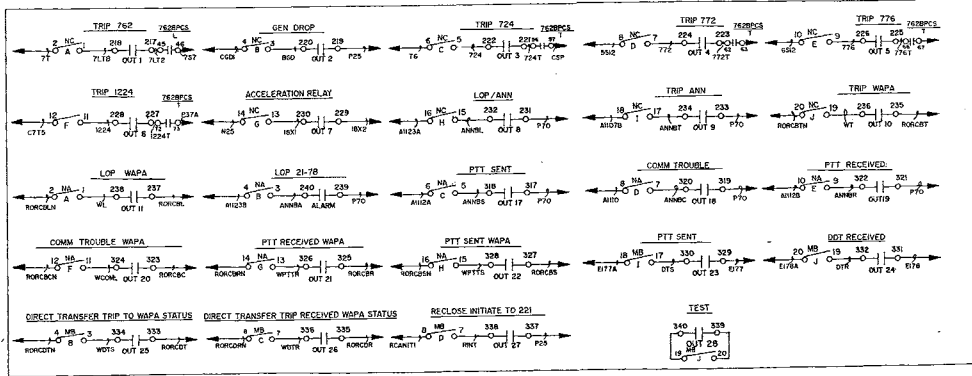
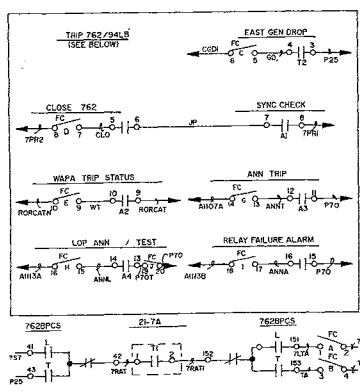
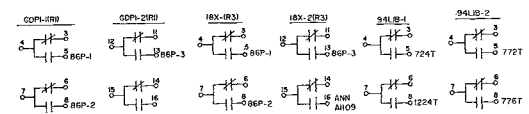
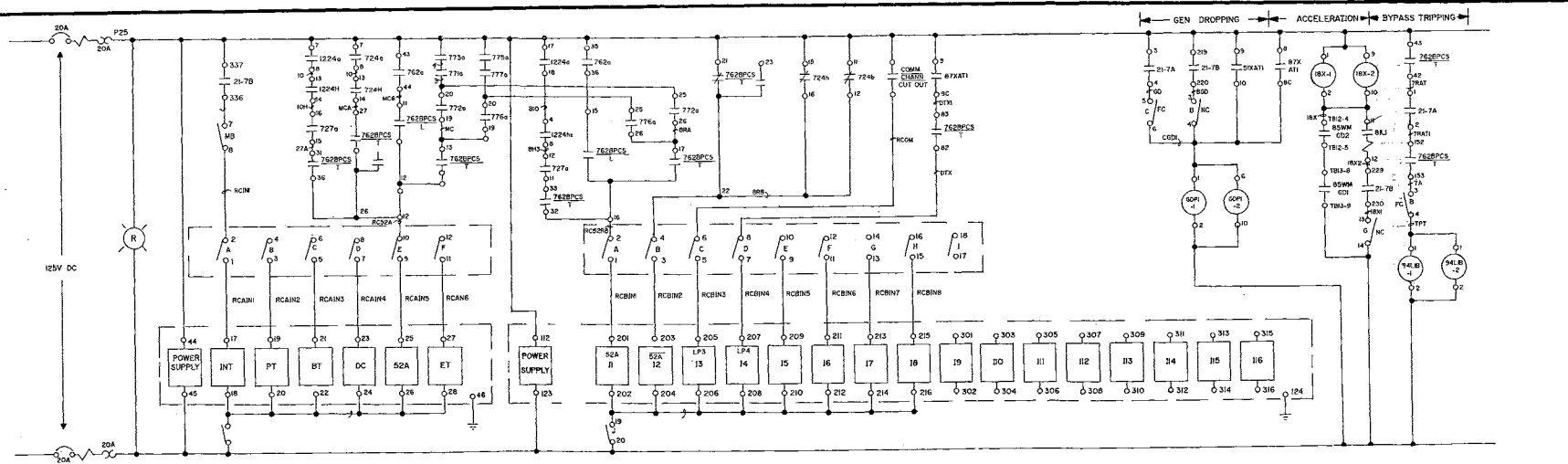


MOD 721 CONTROL CIRCUIT

AUTO TRANSFORMER | CONTROL CIRCUIT



<p align="center">\$ - THINK VALUE ENGINEERING - \$</p>			
<p align="center">Revisions</p>			
<p>10 JAN 02 REDRAW WITH REVISIONS</p>			
<p align="center">U.S. ARMY ENGINEERING DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA</p>			
<p>Designed by:</p>		<p align="center">MISSOURI RIVER FORT PECK PROJECT, MONTANA</p>	
<p>Drawn by:</p> <p align="center">g</p>			
<p>Checked by:</p>		<p align="center">VCB 724 & AUTO TRANS #1 CONTROL DIAGRAMS</p>	
<p>Reviewed by:</p>		<p>Scale: As Shown</p>	<p>Date: 10 JAN 2002</p>
<p>Submitted by:</p>		<p>Spec No: DACW65 CONTRACT NO: DACW65</p>	<p>Drawing Code: MFP-OPN8367.6</p>
<p>Chert</p>	<p>Section</p>		



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3/27/02 ELECTRONIC RELAY REVISIONS

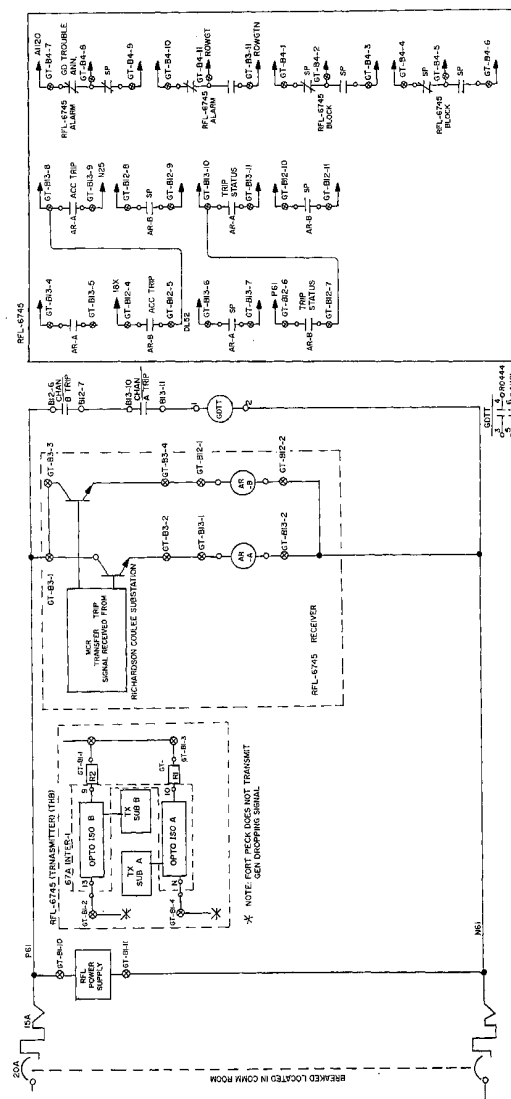
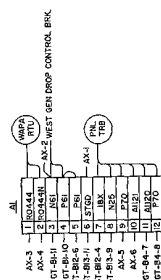
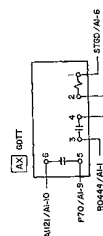
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: _____
 Drawn by: _____
 Checked by: _____
 Reviewed by: _____

**MISSOURI RIVER
FORT PECK PROJECT, MONTANA
RICHARDSON COULEE LINE
CONTROL DIAGRAM
SHEET 1**

28 MARCH 2002
 Drawing Code:
MFP-OPN83E382.8





<p align="center">\$\$ -- THINK VALUE ENGINEERING -- \$\$</p>									
<p align="center">Revisions</p>									
<p>3 MARCH 68 D.C. CONTROL DIAGRAM ADDED</p>									
<p>14 DEC 91 NEW DRAWING</p>									
<p align="center">U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA</p>									
<p>Designed by:</p>			<p align="center">MISSOURI RIVER</p>						
<p>Drawn by:</p>			<p align="center">FORT PECK PROJECT, MONTANA</p>						
<p>Checked by:</p>			<p align="center">WEST SYSTEM GEN DROPPING</p>						
			<p align="center">RELAYING COMMUNICATIONS</p>						
			<p align="center">WIRING AND D.C. CONTROL DIAGRAMS</p>						
			<p align="center">TONE CABINET - CARRIER/PHONE ROOM</p>						
<p>Reviewed by:</p>			<p>Scale: As Shown</p>			<p>Date: 14 DEC 2001</p>			
<p>Submitted by:</p>			<p>Spec. No.: OAC-WMS</p>			<p>Drawing Code:</p>			
<p>Contract No.: OAC-WMS</p>			<p align="center">MFP-0PN83E38J1</p>						
<p>Sheet:</p>									